

CLAIMS

1. A triple effect absorption refrigerating machine comprising:

a high temperature regenerator;

5 an intermediate temperature regenerator;

a low temperature regenerator;

a condenser;

an absorber;

an evaporator;

10 an auxiliary regenerator;

an auxiliary absorber; and

a path for interconnecting these devices, said triple effect absorption refrigerating machine characterized in further comprising:

15 a high concentration circulation path for circulating a solution among said absorber, said auxiliary regenerator, said intermediate temperature regenerator and said high temperature regenerator; and

a low concentration circulation path for circulating
20 a solution between said auxiliary absorber and said low temperature regenerator, wherein said triple effect absorption refrigerating machine further comprises:

a path for guiding a refrigerant vapor generated in said auxiliary regenerator to said auxiliary absorber;

25 a path for guiding a refrigerant vapor generated in said intermediate temperature regenerator to said low temperature regenerator and said auxiliary regenerator in the heating sections thereof; and

a path for guiding a refrigerant vapor generated in said high temperature regenerator to said intermediate temperature regenerator in the heating section thereof.

2. A triple effect absorption refrigerating machine in accordance with claim 1, further comprising a means for suspending or activating a function(s) of said auxiliary regenerator and/or said auxiliary absorber.

3. A triple effect absorption refrigerating machine comprising:

10 a high temperature regenerator;

an intermediate temperature regenerator;

a low temperature regenerator;

a condenser;

an absorber;

15 an evaporator;

an auxiliary regenerator;

an auxiliary absorber; and

a path for interconnecting these devices, said triple effect absorption refrigerating machine characterized in

20 further comprising:

a path serving both for guiding a part of a dilute solution from said absorber to said auxiliary absorber and for guiding a dilute solution from said auxiliary absorber to said low temperature regenerator;

25 a path for returning a solution in said low temperature regenerator to said absorber via said auxiliary regenerator; and

a path for guiding a refrigerant vapor generated in

said auxiliary regenerator to said auxiliary absorber,
wherein said triple effect absorption refrigerating machine
further comprises:

5 a path for guiding a refrigerant vapor generated in
said intermediate temperature regenerator to said low
temperature regenerator and said auxiliary regenerator in
heating sections thereof; and

a path for guiding a refrigerant vapor generated in
said high temperature regenerator to said intermediate
10 temperature regenerator in a heating section thereof.

4. A triple effect absorption refrigerating machine in
accordance with claim 3, further comprising a means for
suspending or activating a function(s) of said auxiliary
regenerator and/or said auxiliary absorber.

15 5. A triple effect absorption refrigerating machine
comprising:

a high temperature regenerator;
an intermediate temperature regenerator;
a low temperature regenerator;
20 a condenser;
an absorber;
an evaporator;
an auxiliary regenerator;
an auxiliary absorber; and

25 a path for interconnecting these devices, said triple
effect absorption refrigerating machine characterized in
further comprising a means for switching cycles among:

(a) a cycle having:

a high concentration circulation path for circulating a solution among said absorber, said auxiliary regenerator, said intermediate temperature regenerator and said high temperature regenerator; and

5 a low concentration circulation path for circulating a solution between said auxiliary absorber and said low temperature regenerator, wherein said cycle forms:

a path for guiding a refrigerant vapor generated in said auxiliary regenerator to said auxiliary absorber;

10 a path for guiding a refrigerant vapor generated in said intermediate temperature regenerator to said low temperature regenerator and said auxiliary regenerator in heating sections thereof; and

a path for guiding a refrigerant vapor generated
15 in said high temperature regenerator to said intermediate temperature regenerator in a heating section thereof;

(b) a cycle having:

a path serving both for guiding a part of a dilute solution from said absorber to said auxiliary
20 absorber and for guiding a dilute solution from said auxiliary absorber to said low temperature regenerator;

a path for returning a solution in said low temperature regenerator to said absorber via said auxiliary regenerator; and

25 a path for guiding a refrigerant vapor generated in said auxiliary regenerator to said auxiliary absorber, wherein said cycle forms:

a path for guiding a refrigerant vapor generated

in said intermediate temperature regenerator to said low temperature regenerator and said auxiliary regenerator in the heating sections thereof; and

5 a path for guiding a refrigerant vapor generated in said high temperature regenerator to said intermediate temperature regenerator in the heating section thereof; and

(c) a cycle for suspending a function(s) of said auxiliary regenerator and/or said auxiliary absorber in either one of said (a) or (b) cycle,

10 said triple effect absorption refrigerating machine further comprising a means for switching cycles among said cycles (a), (b) and (c).

6. A triple effect absorption refrigerating machine in accordance with either one of claim 1, 3 or 5, in which
15 said auxiliary regenerator comprises an adjusting mechanism for increasing/decreasing a heat-concentration power.

7. A triple effect absorption refrigerating machine in accordance with either one of claim 1, 3 or 5, in which said auxiliary absorber comprises an adjusting mechanism
20 for increasing/decreasing an absorption power.

8. A triple effect absorption refrigerating machine in accordance with either one of claim 1, 3 or 5, in which said auxiliary regenerator comprises an adjusting mechanism for increasing/decreasing a heat-concentration power and
25 said auxiliary absorber comprises an adjusting mechanism for increasing/decreasing an absorption power.

9. A triple effect absorption refrigerating machine in accordance with either one of claim 1 to 8, further

comprising a path having a vapor valve for guiding a refrigerant vapor generated in said high temperature regenerator and/or said intermediate regenerator to a

regenerator having a one-step lower pressure level.

10. A triple effect absorption refrigerating machine in accordance with either one of claim 1, 2, 5, 6, 7, 8 or 9, further comprising a path for introducing the solution in
5 said high concentration circulation path into said low concentration circulation path, and for returning the solution in said low concentration circulation path to said high concentration circulation path to make a balanced circulation with respect to said introduction of the
10 solution.

11. A triple effect absorption refrigerating machine in accordance with either one of claim 5, 6, 8 or 9, in which said means for switching cycles, said adjusting mechanism for increasing/ decreasing a heat-concentration power or
15 said vapor valve is provided with a control mechanism for adjusting an internal pressure and/or a solution temperature of said high temperature regenerator or physical quantities relating thereto so as not to exceed respective predetermined values.

20 12. A triple effect absorption refrigerating machine comprising:

a high temperature regenerator;
an intermediate temperature regenerator;
a low temperature regenerator;
25 a condenser;
an absorber;
an evaporator;
an auxiliary regenerator;

an auxiliary absorber; and

a path for interconnecting these devices, said triple effect absorption refrigerating machine characterized in further comprising:

5 a high concentration circulation path for circulating a solution among said absorber, said auxiliary regenerator, said intermediate temperature regenerator and said high temperature regenerator; and

 a low concentration circulation path for circulating
10 a solution between said auxiliary absorber and said low temperature regenerator, wherein said triple effect absorption refrigerating machine still further comprises:

 a path for guiding a refrigerant vapor generated in said auxiliary regenerator to said auxiliary absorber;

15 a path for guiding a refrigerant vapor generated in said intermediate temperature regenerator to said low temperature regenerator and/or said auxiliary regenerator in heating section(s) thereof; and

 a path for guiding a refrigerant vapor generated in
20 said high temperature regenerator to said intermediate temperature regenerator in a heating section thereof, wherein

 said low temperature regenerator and/or said auxiliary regenerator are provided with a heat-transfer
25 pipe for receiving an exhaust heat from an external source to heat the solution.

13. A triple effect absorption refrigerating machine in accordance with claim 1, in which said intermediate

temperature regenerator is provided with a heat-transfer pipe for receiving an exhaust heat from an external source to heat the solution.

14. A triple effect absorption refrigerating machine in accordance with claim 12 or 13, in which said low temperature regenerator and/or said auxiliary regenerator are provided with a heat-transfer pipe for receiving an exhaust heat from an external source to heat the solution, said exhaust heat being embodied by a fluid of sensible heat, wherein said fluid is guided to said low temperature regenerator and then to said auxiliary regenerator.

15. A triple effect absorption refrigerating machine in accordance with claim 12 or 13, in which said intermediate temperature is provided with a heat-transfer pipe for receiving an exhaust heat from an external source to heat the solution, said exhaust heat being embodied by a fluid of sensible heat, wherein said fluid is guided to said intermediate temperature regenerator and then to said low temperature regenerator and/or said auxiliary regenerator.

16. A triple effect absorption refrigerating machine comprising:

- a high temperature regenerator;
- an intermediate temperature regenerator;
- a low temperature regenerator;
- a condenser;
- an absorber;
- an evaporator;
- an auxiliary regenerator;

an auxiliary absorber; and

a path for interconnecting these devices, said triple effect absorption refrigerating machine characterized in further comprising:

5 a high concentration circulation path for circulating a solution among said absorber, said auxiliary regenerator, said intermediate temperature regenerator and said high temperature regenerator; and

 a low concentration circulation path for circulating
10 a solution between said auxiliary absorber and said low temperature regenerator, wherein said triple effect absorption refrigerating machine still further comprises:

 a path for guiding a refrigerant vapor generated in said auxiliary regenerator to said auxiliary absorber;

15 a path for guiding a refrigerant vapor generated in said intermediate temperature regenerator to said low temperature regenerator and said auxiliary regenerator in heating sections thereof; and

 a path for guiding a refrigerant vapor generated in
20 said high temperature regenerator to said intermediate temperature regenerator in a heating section thereof, wherein

 said intermediate temperature regenerator is provided with a heat-transfer pipe for receiving an exhaust heat
25 from an external source to heat the solution.